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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.  | CONFIRMATION NO. |
|--|-------------|----------------------|----------------------|------------------|
| 10/709,138   | 04/15/2004  | Kei MURAYAMA         | 040170               | 3137             |
| 23850  | 7590        | 12/29/2005           | EXAMINER             |                  |
| ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP<br>1725 K STREET, NW<br>SUITE 1000<br>WASHINGTON, DC 20006 |             |                      | ABRAMOWITZ, HOWARD E |                  |
|  |             |                      | ART UNIT             | PAPER NUMBER     |
|  |             |                      | 1762                 |                  |

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |  |                     |  |
|------------------------------|------------------------|--|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> |  | <b>Applicant(s)</b> |  |
|                              | 10/709,138             |  | MURAYAMA, KEI       |  |
|                              | <b>Examiner</b>        |  | <b>Art Unit</b>     |  |
|                              | Howard E. Abramowitz   |  | 1762                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 April 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/16/05, 4/29/04, 4/21/04, 4/16/04</u> | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4, 5, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Svedberg et al. (US Patent No. 6,194,032) in view of Drotar et al. (US Patent No. (3,573,973)).

Referring to claims 1, Svedberg et al. discloses coating an aluminum nitride (insulator) substrate with a refractory metal (conductive) in a patterned form and selectively electrolessly plating the refractory metal with Nickel. It does not give details as to the method of the electroless deposition (columns 10-11 lines 55-11). However, Drotar et al. teaches a method for selectively applying a Nickel coating onto a substrate by the given method, including, adhering a catalyst to the entire surface (column 4 lines 10-22), forming a protective film over the parts of the film to be left uncovered (column 4 lines 35-45), and forming selectively a metal layer over the desired pattern by electroless plating (columns 4-5 lines 71-5). The use of this method is desirable because it decreases processing time and increases the adhesion of the circuitry to the circuit boards. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Svedberg et al. to use the method of

Drotar et al. with an expectation that the processing time will be decreased and that the adhesion of the circuitry will be increased.

Referring to claim 4, Drotar et al. discloses a reduction of the palladium ions to a palladium metal (column 4 lines 19-22).

Referring to claim 5, Svedberg et al. discloses forming patterns such as a plane, a pad, an island, a street or others (which would compose a plurality of different dimensions) (column 10 lines 55-67). It would have been obvious to one of ordinary skill in the art to place the protective film in a space between the conductive patterns and have the protective film be smaller than the dimensions of the patterned conductive region.

Referring to claim 7, Drotar et al. discloses using palladium metal as the catalyst and plating nickel or copper (column 4 lines 10-22, columns 4-5 lines 71-5).

Referring to claim 9, Drotar et al. teaches the protection film is a resin film which can act as a resist film as it resists decomposition and plating during the processing steps (column 4 lines 35-56).

Claims 2, 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (US Patent No. 4,668,533).

Referring to claim 2, Miller discloses an electroless plating method comprising selectively adhering a catalytic metal onto an active integrated circuit which has patterned conductive regions and that the method can be applied to the metal (conductive regions) of the substrate. While it does not specifically disclose applying it

Art Unit: 1762

to only the conductive patterned surface. It would have been obvious to one of ordinary skill in the art to do so if one wished to coat the metal surface of an active integrated circuit as that would be the only area that one would wish to make reactive with the electroless solution. It then discloses electrolessly plating the patterned catalyzed layer (column 2 lines 32-53, column 3 lines 25-33).

Referring to claim 6, Miller discloses coating selectively the metal ions by an ink jet method using palladium salts and reducing them to form the catalyzed metal layer (column 2 lines 32-53, column 3 lines 9-10).

Referring to claim 8, the catalyst is palladium and the metal layer is copper (column 3 lines 1-13).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Svedberg et al. in view of Drotar in further view of Zohar et al. (US Patent No. 6,754,551).

Svedberg et al. in view of Drotar et al. teach all of the features of the claim as discussed above, except they do not teach to deposit the protection film using an ink jet method.

However, Zohar teaches an ink jet method for depositing plating resist masks (column 9 line 39) that runs at a high velocity and high precision is capable of accepting PCB of any size and that ink jetting is a low cost and high quality method of printing (column 6 lines 61-67, column 10 lines 24-30). Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Svedberg et al. in view of Drotar et al. to use an ink jet method to deposit the protective layer with an

expectation that it will be a cheap and high quality method of forming the protective layer.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard E. Abramowitz whose telephone number is 571-272-8557. The examiner can normally be reached on monday-friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*HEA*  
HEA

*Michael Cleveland*  
**MICHAEL CLEVELAND**  
**PRIMARY EXAMINER**